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Patent
92478-9200



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Joseph McCrossan, et al.

Serial No.: 10/563,262

Filed: June 5, 2006

For: RECORDING MEDIUM, RECORDING
METHOD, REPRODUCTION
APPARATUS AND METHOD AND
COMPUTER-READABLE PROGRAM

Group Art Unit: 2615

August 23, 2006

Costa Mesa, California 92626

PETITION TO MAKE SPECIAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sirs:

This Petition to Make Special is being submitted in accordance with 37 CFR §1.102(d) in order to accelerate examination of the above-identified application. Submitted below are items (A) through (D) as required pursuant to MPEP §708.02(VIII):

A. FEE

Submitted with this Petition to Make Special is the fee set forth in 37 CFR §1.17(h).

B. SINGLE INVENTION

In the event that the Office determines that all the claims presented are not obviously directed to a single invention, it is hereby submitted that the Applicants will make an election without traverse as a prerequisite to the grant of special status.

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C. PRE-EXAMINATION SEARCH

Submitted herewith is an International Search Report issued by the Japanese Patent Office in a corresponding foreign application having claims of the same scope to the claims currently pending in this application. (An English copy of the search report is attached.)

D. COPY OF REFERENCES

Submitted herewith is a copy of the following references which are cited in the foreign search report and which are deemed most closely related to the subject matter encompassed by the claims:

Document 1: WO 01/22729 A
Document 2: EP 0924 934 A
Document 3: US 6 104 706 A
Document 4: US 2003/117529 A1
Document 5: EP 1 035 735 A

E. DETAILED DISCUSSION

Provided next is a detailed discussion which points out, with the particularity required by 37 CFR §1.111(b) and (c), how the claimed subject matter is patentable over the cited references.

In the above documents, Document 1 was cited as of particular relevance to certain claims, particularly independent Claims 9, 19 and 20.

The present invention relates to the field of graphic display technology that reproduces a digital stream generated by multiplexing a video stream and a graphic stream. For example, as recording medium have increased their capacity to store data, it is possible to provide one or more movies with a single recording medium and to provide subtitles and other forms of graphic material that can be multiplexed with the video stream that can represent the moving picture. The graphic stream can include a plurality of display sets that are each made up of display control information in graphic data. The present invention provides features to assist in the

reproduction of the content, a graphics display based on each of the plurality of display sets contained in the graphic stream.

Thus, referring to Claim 1, the graphic stream and the multiplexed video and graphics digital includes a plurality of display sets, each of which is used for graphics display. The display sets include a control segment and graphic data that is assigned an identifier. When an active period of the control segment in a specific display set overlaps with an active period of a control segment in an immediately preceding display set on a reproduction time axis, it is possible to distinguish by the identifier a particular control segment. The control segment can also be provided at the beginning of a display set with time information showing the decoding start time and time information showing a display start time.

Accordingly, the reproduction apparatus in decoding of the video stream and the graphic stream can identify and appropriately store decoded graphic data for a display set in a different area of an object buffer to facilitate timing and display of the information.

First, the technical field to which the present invention belongs and the background of the present invention are explained below. The present invention belongs to a field of graphic display technology that reproduces a digital stream generated by multiplexing a video stream and a graphics stream.

When reproducing the graphics stream, the reproduction apparatus composes a graphics display based on each of a plurality of display sets contained in the graphics stream.

Each display set includes a set of data necessary for composing the graphics display, such as a control segment and graphics data. The control segment includes time information. The time information designates the active period of the control segment in the display set, on the reproduction time axis of the video stream. Since the active period is designated by the time

information, if the active period of the control segment belonging to one display set and the active period of the control segment belonging to its succeeding display set are overlapped, then the graphics display composition processing is pipelined.

Thus, the background of the present invention is a data structure in which the active period of the control segment is designated by the time information and the graphics display is realized based on this active period. In such a background, the present invention is characterized by the following setting of the time information:

“the time information designates the active period of the control segment in the display set to start at or after a time at which, during the active period of the control segment in the immediately preceding display set, transfer of graphics generated by decoding graphics data in the immediately preceding display set is completed.”

The present invention, as set forth in the claims, has a distinct feature that the pipeline start timing is adjusted by setting the time information of the display set with respect to the immediately preceding display set.

The following explains in detail the reason why the above feature is neither anticipated by nor rendered obvious from the references.

D1 (WO 01/22729 A) discloses a closed caption tagging system for inserting tags into an audio or video television broadcast stream prior to or at the time of transmission. The tags contain command and control information. The receiver receives the broadcast stream and stores it on a storage device, and detects and processes the tags within the stored broadcast stream. Program material from the broadcast stream is played back to the viewer from the storage device. The receiver performs the appropriate actions in response to the tags. In this processing, three components that are a source, a transform, and a sink are pipelined (Figs. 8 and 9).

The source is a component that accepts data from encoders in a digital satellite receiver.

The transform is a component that executes a spatial transform (an image convolution or compression/decompression by data) and a temporal transform for the received data.

The sink is a component that consumes buffers, taking data from the transform, sending the data to the decoder, and then releasing the buffer for reuse.

The source, the transform, and the sink can be multithreaded and executed in parallel. Flow control of these components is exercised by the TmkPipeline class.

This reference is only similar to the present invention in that some kind of data is processed by a pipeline. However, the target of the pipeline in this reference is the processes for the tags such as the source, the transform, and the sink, and not the realization of the graphics display corresponding to each display set. Even if the tag processes in this reference are regarded as graphics display, this reference does not adjust the pipeline start timing by defining the time information. Accordingly, this reference cannot be served as a prior art reference to anticipate the present invention.

Also, this reference cannot serve as a prior art reference to render obvious the present invention. This reference merely discloses the idea of pipelining the tag processes in the receiver, and does not show the concept on which the above claimed features are based, i.e. the concept of adjusting the pipeline start timing so that the active period of the control segment in the display set starts at or after a time at which, during the active period of the control segment in the immediately preceding display set, transfer of graphics generated by decoding graphics data in the immediately preceding display set is completed. Hence the present invention is unobvious from this reference.

D2 (EP 0924 934 A) discloses a technique in which each of a coding circuit for audio signals, a coding circuit for video signals, and a coding circuit for scene data output time

information representing a decoding timing, a composition circuit outputs time information representing a composition timing, and a multiplexing circuit multiplexes the compressed data based on this time information. The video stream obtained by the multiplexing circuit includes a reference clock value, and the time stamps and compressed data for audio, video, and scene data respectively (Fig. 26).

While this reference has data designated by time information, it does not show any concept of adjusting a pipeline start timing by defining the time information. Accordingly, this reference cannot be a prior art reference that anticipates the present invention nor render obvious the present invention. This is because this reference merely shows an idea of specifying the display timings of audio, video, and scene data using time stamps, and does not show the concept on which the above features are based, i.e. the concept of adjusting the pipeline start timing so that the active period of the control segment in the display set starts at or after a time at which, during the active period of the control segment in the immediately preceding display set, transfer of graphics generated by decoding graphics data in the immediately preceding display set is completed.

D3 (US 6 104 706 A) discloses a technique in which the receiver receives video data, audio data, and text/graphics from the sender and plays them back in real time. The real time playback is maintained by delaying the extraction of audio data accumulated on a FIFO buffer according to the average buffer delay time in the system.

The D3 reference does not teach adjusting a pipeline start timing by defining the time information. It merely discloses the idea of delaying the extraction of audio data accumulated on the FIFO buffer according to the average buffer delay time in the system, and does not show the concept on which the above claimed features are based, i.e. the concept of adjusting the pipeline

start timing so that the active period of the control segment in the display set starts at or after a time at which, during the active period of the control segment in the immediately preceding display set, transfer of graphics generated by decoding graphics data in the immediately preceding display set is completed. Hence the present invention is unobvious from this reference.

D4 (US 2003/117529 A1) discloses a technique of transmitting additional information such as graphics information or subtitles in addition to video information. This additional information is transmitted separately, so that the user may choose whether the additional information is to be displayed or not. Here, the video signal includes information relating to the duration for which the additional information is to remain on the display. According to this information, the additional information can be displayed exactly for the duration of the desired time. This is advantageous in trick modes such as Fast Forward.

D4 reference does not show any concept of adjusting a pipeline start timing by defining time information. The time information in reference D4 merely designates the duration for which the additional information such as graphics is to remain on the display, and does not show, i.e. the concept of adjusting the pipeline start timing so that the active period of, the control segment in the display set starts at or after a time at which, during the active period of the control segment in the immediately preceding display set, transfer of graphics generated by decoding graphics data in the immediately preceding display set is completed. Hence the present claims are unobvious from this reference.

D5 (EP 1 035 735 A) discloses a packetization device for achieving packetization of a moving image code string by adding a RTP (Real Time Protocol) header to each unit composed of one or more video packets out of the video packets included in the moving image code string.

The RTP header in the D5 reference merely designates the time for real time processing, and does not show the concept on which the above claims are based, i.e. the concept of adjusting the pipeline start timing so that the active period of the control segment in the display set starts at or after a time at which, during the active period of the control segment in the immediately preceding display set, transfer of graphics generated by decoding graphics data in the immediately preceding display set is completed. Hence the present invention is unobvious from this reference.

The above differences of the present invention from the references contribute to the following effects.

With the provision of the above claimed features, the recording medium of the present invention can have a reproduction apparatus start processing one display set in the middle of the active period of the control segment of the immediately preceding display set. This timing with which the processing of the display set is started is when the decoding and transfer of the graphics of the immediately preceding display set are completed. Therefore, the processing of the display set can be advanced by a time period from the completion of the decoding and transfer of the graphics of the immediately preceding display set to the end of the active period of the control segment in the immediately preceding display set. .

Since the processing of the display set can be started without waiting for the active period of the control segment in the immediately preceding display set to end, display sets can be processed in the pipeline even if there is only a single pair of controller/processor for realizing graphics display.

Even when the processing of the display set is started during the active period of the control segment in the immediately preceding display set in such a way, the time period in which

the graphics of the display set is written to the buffer does not overlap with the time period in which the graphics of the immediately preceding display set is written to the buffer. Accordingly, two or more display sets can be processed in the pipeline even with a single processor for decoding graphics. Such pipeline processing increases decoding efficiency, without complicating the internal construction of the reproduction apparatus.

Claims 2-8 are dependent from Claim 1, and so are neither anticipated by nor rendered obvious from the references. Also, Claim 18 (recording method) is neither anticipated by nor rendered obvious from the references, for the same reason as Claim 1.

Claims 9-17 (reproduction apparatus), Claim 19 (program), and Claim 20 (reproduction method) are rejected as being anticipated by D1. To overcome this rejection, we amend Claims 9, 19, and 20 to include the limitations of Claim 1. As a result of this amendment, these claims are neither anticipated by nor rendered obvious by the actual references for the same reason as Claim 1.

It is believed that applicant has satisfied the requirements for the request for Petition to Make Special and if there are any questions with regards to this matter, the undersigned attorney would appreciate a telephone conference and can be reached at the phone number listed below.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on August 23, 2006.

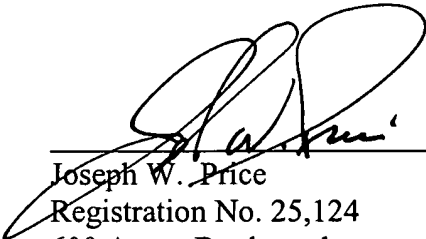
By: Sharon Farnus
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Signature

Dated: August 23, 2006

Very truly yours,

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INTERNATIONAL SEARCH REPORT

International Application No

JP2004/010155

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N5/92

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	<p>WO 01/22729 A (TIVO INC) 29 March 2001 (2001-03-29) page 3, line 16 - line 22 page 7, line 6 - page 10, line 17 page 11, line 7 - page 15, line 21 page 16, line 1 - page 19, line 2</p> <p>page 19, line 30 - page 20, line 35 page 25, line 30 - page 28, line 7 page 30, line 9 - line 26 page 39, line 24 - page 40, line 37 figures 1-9, 11, 12, 17, 19, 20</p> <p style="text-align: center;">----- -/--</p>	<p>9-12, 19, 20</p> <p>1-8, 13-18</p>

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

*** Special categories of cited documents:**

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

8 November 2004

Date of mailing of the international search report

16/11/2004

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

JP2004/010155

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